ATTACHMENT

Specific Technical Comments
on CALFED Draft PEIS/EIR and Technical Appendices

These specific comments are organized by topic. Their order does not infer greater or lesser importance to the Ag-Urban Technical Coordination Group.

Water Quality
Draft PEIS/EIR

Page 2-10. The list of potential concerns of the habitat restoration program should include a bullet on the potential impacts on drinking water quality (organic carbon) and ecosystem water quality (mercury).

Page 2-11. Water use efficiency measures may actually concentrate the pollutants in drain water and result in adverse impacts at locations receiving the drain water discharges.

Page 2-11. The third item in the list of benefits of the Water Quality Program should be amended to state "In conjunction with storage and conveyance alternatives, improves drinking water quality at some locations and provides public health benefits." The Water Quality Program will not improve the North Bay Aqueduct water quality.

Page 2-12. The fourth item in the list of benefits of the Water Quality Program should be amended to state "May reduce concentration of organic carbon at some intake locations. Organic carbon contributes to the formation of disinfection byproducts in drinking water supplies." The Water Quality Program as currently defined will not reduce organic carbon concentrations at the North Bay Aqueduct intake and will not likely reduce bromide peak concentrations at any of the water supply intakes in the Delta.

Page 2-12. The list of potential concerns of the Water Quality Program should include "Source control actions will not significantly reduce bromide concentrations at drinking water intakes."

Page 2-16. The CALFED Coordinated Watershed Management Program should provide funding and technical resources to individual watershed efforts that are underway in the Sacramento Basin and should initiate a San Joaquin watershed program, similar to the Sacramento River Watershed Program.

Page 2-16. One of the stated goals of the Coordinated Watershed Management Program is to implement data collection and standardized monitoring. We thought the Comprehensive Monitoring Assessment and Research Program (CMARP) was responsible for these activities.

Page 2-17. The relocation of habitat restoration activities from the south Delta to the north Delta acknowledges that it would be "prudently distant from the South Delta pumping facilities" but it does not acknowledge that the new habitat would be in close proximity to the North Bay Aqueduct pumping plant on Barker Slough.

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Page 2-22. The discussion of relocating the North Bay Aqueduct intake should acknowledge that the habitat restoration activities in the northwestern Delta are a potential reason for relocating it. In addition, with the current organization of the document it appears as if evaluating the relocation of the North Bay Aqueduct intake is only included in Alternative 1A. It should be included in all of the alternative 1 configurations.

Page 2-22. The discussion of the Water Quality Program additions should include relocating Delta island drainage discharges away from the drinking water intakes and/or treating the Delta island drainage to remove organic carbon.

Page 3-2 to 3-11. Table 3-1 should include a summary statement that none of the alternatives will improve the water quality for the North Bay Aqueduct.

Page 3-8. There is a statement under the Other Programs column that "The Water Quality Program would result in a loss of jobs in the San Joaquin River region as lands are retired." There is no discussion of "land retirement" in the Water Quality Program Technical Appendix. Several of the actions refer to changing land use but do not specifically call for land retirement. The Ecosystem Restoration Program calls for land retirement but the Water Quality Program does not. The text should be changed to correct this error.

Page 3-9. There is a statement under the Other Programs column that the Water Quality Program will have flood control benefits. Based on a review of the Water Quality Program actions, it is unclear as to how the Water Quality Program will benefit flood control.

Page 4-6. Figure 4-2 should include the North Bay Aqueduct.

Page 5-7. There is a statement that retirement of agricultural lands in the San Joaquin Valley is included in the No Action Alternative yet the table on page 5-6 shows 35,000 to 45,000 acres of land being retired as part of the Water Quality Program. The Water Quality Program actions do not include land retirement.

Page 6.1-10. The Ecosystem Restoration Program may also increase TOC and mercury concentrations in Delta waters.

Page 6.1-11. A discussion of the impacts of the No Action Alternative and Alternative 1 on the North Bay Aqueduct water quality should be included.

Page 6.1-12. A discussion of the impacts of Alternatives 2 and 3 on the North Bay Aqueduct water quality should be included.

Page 6.1-13. The potential adverse water quality impacts of the Ecosystem Restoration Program should be acknowledged.

Page 6.1-13. The description of the impacts of the Water Quality Program is inadequate. The level of detail and explanation provided for the other program elements should be included for the Water Quality Program. Overall, the Water Quality Program will have beneficial impacts on river and Delta water quality, although south Delta export water quality will not likely be improved sufficiently to meet target levels for organic carbon and bromide.

Page 6.1-13 - The Levee Program could also result in mobilization of metals and organics during construction activities and afterwards.

Page 6.1-15. There are several notable errors on the map. New Melones Reservoir is on the Stanislaus River, not the American River; the California Aqueduct and Delta Mendota Canal are mislabeled, and the North Bay Aqueduct does not extend into Marin County.

Page 6.1-17. The statement that "The X2 position approximates the location of the entrapment zone, an area of high biological productivity" was shown to not be the case by Jon Burau (U.S.G.S.) in the recent IEP X2 Workshop.

Page 6.1-17. In the third paragraph the reference to the Central Valley should be changed to the Sacramento Valley. A discussion of the impacts of Delta agriculture on organic carbon in Delta waters should be included.

Page 6.1-19. In the listing of principal sources of parameters of concern the following additions should be made:
Stormwater - dissolved solids
Municipal and industrial wastes - organic carbon, pesticides, herbicides
Surface agriculture - organic carbon, pesticides, herbicides

Page 6.1-19. In the last bullet there is a statement that "High metals concentrations have the greatest potential for adverse effects on drinking water supply and environmental and recreational uses." High metals certainly impact aquatic life and the ability to consume aquatic organisms with high body burdens of metals affects humans. Metals concentrations in the Delta are well below drinking water standards. The parameters that have the greatest impact on drinking water quality are pathogens, organic carbon, bromide, and dissolved solids.

Page 6.1-20. The list of parameters of concern should be updated to agree with the most recent list developed by the Water Quality Technical Group and Parameter Assessment Team.

Page 6.1-21 and 22. There are inconsistencies in the descriptions of tributaries to San Francisco Bay on these two pages.

Page 6.1-23. The discussion of mining impacts needs to include the mining of mercury from the Coast Range. These mining activities have had long-term impacts on Delta water quality.

Page 6.1-31. The discussion of water supply and water management should include other diverters/exporters in addition to the SWP and CVP exports. For example, East Bay Municipal Utility District and the City of San Francisco export water from the Mokelumne and Tuolumne rivers, respectively.

Page 6.1-43. The impacts of Alternative 1 on the North Bay Aqueduct should be included in Table 6.1.2-2.

Page 6.1-54. An explanation is needed for the apparent disappearance of metals in the Sacramento River system.

Page 6.1-55. The discussion of Environmental Consequences:Water Quality contains many statements that are not referenced. References must be provided for statements such as "pollutant loads from wastewater treatment plants and urban runoff are expected to increase by 60%." This is only one example of many unreferenced statements that are in this section.

Page 6.1-59. The discussion of the impacts of the alternatives on Rock Slough is very confusing. Statements are made as to the significance of impacts without a clear reference to which alternative is being evaluated. The discussion of DOC is woefully lacking. It is not adequate to simply state, "DOC concentrations at the Contra Costa Canal Intake and in the south Delta could increase."

Page 6.1-60. The Ecosystem Restoration Program could potentially result in mobilization of metals in soils used for habitat restoration.

Page 6.1-60. The Ecosystem Restoration Program could result in salinity increases as a result of evapotranspiration by the increased biomass.

Page 6.1-60. The statement that "The only potential long-term adverse water quality impact of Ecosystem Restoration Program is an increase in water salinity attributable to increased evaporation" is erroneous. As stated previously, increased evapotranspiration could result in salinity increases. In addition, the Ecosystem Restoration Program could potentially increase organic carbon concentrations in Delta waterways and result in the methylation of mercury in marshes. These are both potentially long-term significant impacts that need to be identified and evaluated.

Page 6.1-60. The discussion of the impacts of the various programs is very limited and needs to be greatly expanded. For example, what impacts might occur as a result of the mine drainage, urban runoff, wastewater, agricultural, etc. actions in the Water Quality Program.

Page 6.1-61. Water conservation activities that reduce discharges to surface water through multiple reuse of tailwater may increase the concentrations of pollutants and result in adverse impacts on aquatic life. It is therefore inappropriate to conclude that efficiency improvements will result in water quality benefits.

Page 6.1-64. The statement, "The solubility of oxygen in water increase proportionately to water temperature" is erroneous. Dissolved oxygen concentrations are inversely proportional to temperature.

Page 6.1-65. The Central Valley Regional Water Quality Control Board's Basin Plan for the Sacramento Basin prohibits the discharge of certain pesticides at levels exceeding water quality goals from rice fields. These prohibitions do not apply to all agricultural practices as stated in the document.

Page 6.1-66. There is the potential to improve San Joaquin River water quality with the storage and conveyance alternatives that is not acknowledged in the report. Improved export water quality in the Delta Mendota Canal may improve the quality of drainage discharged to the river and may improve river water quality.

Page 6.1-66. The statement that, "Drainage from inactive and abandoned mines has been identified as an important source of cadmium, copper, and zinc in the San Joaquin River drainages" is not supported by Table 6.1.3-2. In fact, this table shows just the opposite. Zinc is shown as not detected in the table but the text states that "Mine drainage contributes a considerable proportion of total zinc emissions in the basin." The table shows that urban runoff is by far the source of the metals loading to the San Joaquin River. Copper and other metals are constituents of some pesticides. A mass balance study could help reveal the sources.

Page 6.1-67. The "mixture of benefits and adverse consequences" outside of the Central Valley needs to be more fully described.

Phase II Interim Report

Page iii. The second paragraph implies that the Delta was at one time a reliable source of high quality water that has since been degraded. The Draft PEIS/EIR should clarify what is meant.

Page 2. The long term comprehensive plan should also include water quality improvements along with water supply and ecological health improvements.

Page 2. Supplemental flows during drought conditions will also improve in-Delta water quality and exported water quality at some locations.

Page 6. The first paragraph refers to improvements in water quality. Clarify what improvements they are.

Page 6. Salts also enter the system from connate groundwater supplies.

Page 6. Agricultural drainage in the Delta is a major source of organics.

Page 6. The discussion of water quality conflicts does not mention the potential conflict between ecosystem restoration activities and water quality. Some ecosystem restoration activities may degrade drinking water quality.

Page 24. In the discussion of the Ecosystem Restoration Interrelationships there is no mention of improving water quality conditions.

Page 24. In the discussion of Water Quality Interrelationships there is a statement that conserving water on a farm will reduce the amount of runoff that finds its way back into streams. The amount of runoff may be reduced, but the concentrations of contaminants in that runoff may also be higher depending on the methods used to reduce runoff. The result may be that the load of contaminants remains the same and for some portion of the watercourse, contaminant concentrations may be increased due to the higher concentrations in the runoff. This same faulty reasoning shows up on page 26. Given the uncertainty of resultant concentrations, it is inappropriate to conclude that reduced tailwater return to surface water improves downstream water quality.

Page 31. It's not possible to read this graph because upstream use and Delta export have the same shading.

C-013082

Page 49. In the discussion of Issues and Concerns of the Water Quality Program there should be a statement that there are different opinions on ecosystem water quality targets and how they should be measured (chemical vs. biological success).

Page 49. In the listing of programmatic actions, the Water Treatment action is stated as "Reduce formation of disinfection by-products by controlling TOC, pathogens, turbidity, and bromides." These contaminants should be controlled by source control programs to the extent feasible rather than relying solely on water treatment. The specific action addresses drinking water quality issues with incentives for upgrading drinking water treatment plants to more advanced treatment. Reliance on treatment alone to address water quality concerns for drinking water supplies is poor public policy and runs counter to standard practices in protecting public health. We request that this action be revised to indicate that CALFED does not intend to emphasize treatment alone as a sole means to address drinking water quality concerns. Reliance on treatment alone to address drinking water quality issues is not sufficiently protective of public health and is not consistent with EPA's source water protection programs. Source water quality protection must be a central component of any CALFED Bay-Delta solution, and the Water Quality Program must include source control actions addressing each of the drinking water quality parameters of concern, where it is feasible to do so.

Page 50. Water Quality Program Facts and Figures - need to state that organic carbon will only be reduced substantially through implementation of other program elements.

Page 52. Ecosystem Restoration Program Issues and Concerns - there is also concern that ecosystem actions may adversely affect water quality (mercury and TOC).

page 89. Need to evaluate impact of ecosystem restoration activities on drinking water quality. Relocating ecosystem actions to north Delta may affect ability of North Bay Aqueduct to pump water.

Page 89. How would bromide be handled with Alternative 1?

Page 89. What would be done to improve North Bay Aqueduct water quality? Need to add language from Alternative 2 discussion on page 93.

Page 93. Need to evaluate in-Delta ecosystem restoration activities impact on drinking water quality.

Page 93. In addition to evaluating relocation of the North Bay Aqueduct intake, CALFED should also evaluate watershed management options to improve North Bay Aqueduct water quality. The North Bay Aqueduct Contractors are working in conjunction with the Department of Water Resources to develop a watershed management plan for the Barker Slough watershed. CALFED should support the efforts of the contractors to improve water quality at the North Bay Aqueduct intake.

Page 93. Need to also evaluate treatment of agricultural drains to improve TOC.

Page 93. How would bromide be handled with Alternative 2?

C-013083

Page 98. Consider watershed management for the North Bay Aqueduct (see comment on page 93).

Page 117. With Alternative 1, salinity would be reduced by about 30 percent at the State Water Project Banks Pumping Plant. There would not be a reduction in salinity at the State Water Project North Bay Aqueduct Pumping Plant. This should be acknowledged and discussed.

Page 118. There is a statement in the first paragraph that "organic carbon and bromide form unwanted and potentially harmful chemicals when water is disinfected with chlorine during drinking water treatment." Ozone and other chemicals used as disinfectants also produce unwanted byproducts.

Page 133. How would alternatives affect North Bay Aqueduct water quality? Suggest low all around.

Page 137. While organic carbon in Delta water supplies exported from the south Delta may be at the national average, this is not true for the North Bay Aqueduct water.

Water Quality Program Technical Appendix

Page 4
The term "beneficial use" is used inappropriately, on this page and on pages 7 and 49 of the Water Quality Program Technical Appendix, to refer to the urban, agricultural and ecosystem stakeholder groups. Urban, agriculture and ecosystem are not beneficial uses, rather they are categories of stakeholder interests. Each of these groups is concerned about and interested in the protection of one or more beneficial uses. The document needs to be revised, where appropriate, to distinguish between beneficial uses that are the subject of the CALFED Water Quality Program (e.g., municipal water supply, agricultural water supply, recreation, fisheries, etc.), and the interests or concerns of the urban, agricultural and ecosystem subteams or stakeholder groups. For example, the last sentence in the first paragraph on page 4 could be revised to read as follows: "The teams met separately for several months to identify parameters of concern for the beneficial uses of interest to them and to formulate actions to address the parameters."

Page 4
In the description of the Phase I stakeholder involvement process for the Water Quality Program, it is stated that the urban, agricultural and ecosystem subteams each identified parameters of concern to their respective beneficial uses based upon available data and technical knowledge, and "... based on a set of criteria." However, the criteria used to identify parameters of concern are not described. The document needs to be revised to include a description of the criteria each subteam utilized in their efforts to identify water quality parameters of concern. This information is needed in order to provide the reader with a complete description of the Phase I Water Quality Program activities.

Page 7
The discussion about parameters of concern needs to be revised to include the most recent recommendations of the Parameter Assessment Team and the Water Quality Technical Group regarding additional parameters of concern and potential parameters of concern.

Page 7
The last paragraph needs to be revised to reflect the fact that not all water quality problems associated with the parameters of concern are identified on Clean Water Act section 303(d) lists of impaired water bodies, which are prepared by the Regional Water Quality Control Boards. Parameters of concern are included on section 303(d) lists in those cases where the occurrence of the parameter is thought to be responsible for the violation of an existing numerical or narrative water quality objective. The disinfection by-product precursor parameters of concern, which are of interest to urban water suppliers, do not have water quality objectives. As a result, water quality problems associated with these parameters are not identified on section 303(d) lists of impaired water bodies.

Page 8
Table 1 needs to be revised to incorporate the most recent recommendations of the Parameter Assessment Team and the Water Quality Technical Group regarding additional parameters of concern and potential parameters of concern.

Page 8
The document states that CALFED anticipates that a great deal of water quality information throughout the geographic scope of the program will be compiled by the Comprehensive Monitoring, Assessment, and Research Plan (CMARP); however, no information about CMARP is provided or referenced. We request that CALFED include detailed information on the purpose and role of CMARP in the Revised Draft PEIS/EIR.

We believe that a comprehensive monitoring and research program, such as CMARP, designed to provide an increased understanding of water quality problems and to document the progress and success of source control actions, is an essential component of the Water Quality Program. Despite years of study, many water quality problems are not yet properly understood and the relationship between in-stream biological effects and water quality standards exceedances or toxicity test results using standard bioassays is poorly understood. We understand it is difficult and may not be cost effective to take action prior to understanding the water quality problems of the Delta and its tributaries; however, CALFED needs to find the proper balance between monitoring and taking action. We urge CALFED to substantively involve the interested stakeholders in the development of the details for CMARP.

Page 10
The discussion in paragraph 3 regarding numerical water quality objectives for drinking water sources is misleading and needs to be revised. It should be revised to reflect the fact that the existing numerical water quality objectives applicable to water bodies designated as drinking water supplies do not cover all of the parameters of concern to urban water suppliers using the Delta as a source of supply (i.e., bromide, total organic carbon (TOC), salinity, pathogens, nutrients and turbidity). For the parameters of concern to drinking water suppliers, it is necessary to consider such factors as future likely regulatory scenarios, emerging health effects information, treatment feasibility and cost, and water resource management issues in the development of appropriate source water quality target levels.

For some water quality parameters, like metals and pesticides, there are federal and state drinking water standards (maximum contaminant levels or MCLs) that are applicable to treated drinking water. In these cases it is appropriate to use the drinking water standard as a measure of success in efforts to address drinking water beneficial use impairments. However, for many of

the parameters of concern to urban water suppliers, there are no drinking water standards that are appropriate to use as source water quality target levels. For example, there are no standards for the disinfection by-product precursor parameters (bromide and TOC); rather, there are drinking water standards for disinfection by-products, which are compounds formed in drinking water as a result of disinfectants combining with bromide and TOC. For other drinking water parameters, such as pathogens and turbidity, there are drinking water treatment requirements that are based on source water quality characteristics. In addition, for salinity and nutrients, the existing MCLs for TDS and nitrate are not sufficiently protective of source water quality, because they do not take into consideration resource management and reservoir management issues. These issues regarding appropriate source water quality target levels for drinking water supplies are considered in more detail elsewhere in this comment package.

Page 11
Description of Water Quality Actions: We support CALFED's recent efforts to organize the Water Quality Technical Group into smaller working teams to develop details for the water quality actions contained in the Water Quality Program Technical Appendix and develop a prioritization and implementation strategy for the Water Quality Program. We recognize the importance of this endeavor and urge CALFED to provide sufficient guidance and commitment of resources to ensure the success of this effort.

We also recognize that as an outcome of this effort, many of the water quality actions are likely to be revised substantially, and we expect that CALFED will release the revised Water Quality Program for another period of public review and comment with the Revised Draft PEIS/EIR. At this time we are providing comments on the water quality actions as published in the March 1998 Water Quality Program Technical Appendix, and we look forward to continuing to work with CALFED on the refinement of the water quality actions.

Page 11
Mine Drainage: Action 1
In recent years, the Regional Boards have been reluctant to commit public funds on mine abatement projects due to the concern that the State would become liable for clean up costs. The California Water Code has been amended to allow "good Samaritans" to become involved in mine abatement and to avoid liability. The federal Clean Water Act has not been amended to allow state agencies and others to pursue mine abatement while avoiding liability associated with such efforts. We recommend that the implementation strategy addressing mine drainage include efforts to pursue these needed amendments to the federal Clean Water Act.

Page 14
Urban and Industrial Runoff: Action 1
The methods for addressing beneficial use impairments associated with copper, zinc and cadmium from urban and industrial runoff include "Enforce existing source control regulations." This is also listed as a method under other water quality actions. We believe strongly that existing water quality control regulations should be enforced; however, we do not feel that this is an effective method for CALFED water quality actions. The water quality actions need to be revised to recognize those instances where water quality problems persist despite the existence of source control regulations, and to include methods that supplement and enhance existing source control regulatory programs in order to achieve Water Quality Program goals. If there are indications that existing regulations are not being enforced, CALFED should provide a description of the problem and make specific recommendations to the regulatory agencies

regarding areas where improved enforcement would help improve the Bay-Delta ecosystem. The first method listed under Urban and Industrial Runoff, Action 1, should be revised to read as follows: "Provide financial and technical assistance to municipal and industrial stormwater programs for improved implementation of existing source control requirements."

Page 15
Urban and Industrial Runoff: Action 3
The methods for addressing beneficial use impairments in the Delta Region from low dissolved oxygen levels caused by nutrient loadings include enforcement of existing source control regulations. Please see the above comment for page 14.

Page 16
Urban and Industrial Runoff: Action 5
The bullet item under Research/Monitoring, which reads "Improved understanding of the sources of TOC, salinity, and pathogens in the Delta Region and its watersheds", needs to be moved to the Performance Measures section.

Page 19
Wastewater and Industrial Discharge: Action 5
The bullet item under Research/Monitoring, which reads "Improved understanding of the sources of TOC, salinity, and pathogens in the Delta Region and its tributaries", needs to be moved to the Performance Measures section.

Page 20
Agricultural Drainage and Runoff: Action 1: Research/Monitoring
The evaluation of the feasibility of treatment options should include demonstration scale testing of promising treatment options.

Page 20
Agricultural Drainage and Runoff: Action 1: Methods
Methods to reduce drainage flows through increased water use efficiency should include the operation of district and on-farm water and drainage management systems.

Page 21
Agricultural Drainage and Runoff: Action 2
Action 2 should be revised to read as follows:
"Reduce the impairment of drinking water and agricultural beneficial uses within the Delta Region due to salinity, through source control and treatment of agricultural surface and subsurface drainage in the San Joaquin River Region."

Page 21
Agricultural Drainage and Runoff: Action 2: Methods
The fourth item in this section should be revised to include a discussion of real-time monitoring. Real-time monitoring is needed to time discharges to coincide with periods of high river flow and low in-river salinity concentrations so that water quality objectives are not exceeded in receiving waters. This method can potentially result in lower salinity concentrations in the San Joaquin River at certain times but it will not likely reduce the total salinity load.

Page 21

Agricultural Drainage and Runoff: Action 3
In order to adequately protect environmental beneficial uses, pesticide-related impacts must be addressed in the regions that are tributary to the Delta Region. The Action 3 statement needs to be revised to read as follows:
"Reduce the impairment of environmental beneficial uses in the Delta, Sacramento River and San Joaquin River Regions associated with the pesticides carbofuran, chlorpyrifos and diazinon, through agricultural runoff source control measures."

Page 22
Agricultural Drainage and Runoff: Action 3: Indicators of Success
The first bullet item in this section needs to be revised to read as follows:
"No likely significant toxicity from carbofuran, chlorpyrifos and diazinon in the Delta, Sacramento River and San Joaquin River Regions."

The second bullet item in this section needs to be revised to read as follows:
"Indicate through toxicity identification evaluation (TIE) testing that carbofuran, chlorpyrifos and diazinon are not a significant cause of toxicity in the Delta Region and its tributaries."

Page 22
Agricultural Drainage and Runoff: Action 4
The Action 4 statement needs to be revised to read as follows:
"Reduce the impairment of environmental and drinking water beneficial uses in the Delta Region and its tributaries associated with sediment loading and subsequent turbidity, through agricultural runoff control measures."

Page 23
Agricultural Drainage and Runoff: Action 5
A Research/Monitoring section should be added to this action, and the following bullet item should be included:

- "Evaluate the feasibility of treating Delta Island agricultural drainage to remove TOC, through pilot scale testing."

Page 23
Agricultural Drainage and Runoff: Action 6
Drinking water supplies are impacted by excessive nutrient levels. Nutrients are a critical reservoir management issue because nutrient levels are a determining factor governing the growth of taste-and-odor producing algae in water storage reservoirs. The action statement needs to be revised to read as follows:
"Reduce the impairment of environmental, recreational and drinking water beneficial uses in the Delta Region and its tributaries associated with nutrients and ammonia through source control of agricultural surface drainage."

Page 23
Agricultural Drainage and Runoff: Action 6: Research/Monitoring
The first bullet item needs to be revised to include evaluation of sources, mass loadings and effects of nutrients, ammonia and dairy wastes discharged in the Delta, San Joaquin River and Sacramento River Regions.

Page 24

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Agricultural Drainage and Runoff: Action 6: Indicators of Success
The following additional indicator of success needs to be included in this section:
"No drinking water beneficial use impairment caused by excessive taste-and-odor producing algae growth in water storage facilities for drinking water supplies exported from the Delta."

Page 24
Water Treatment: Action 1
This action addresses drinking water quality issues with incentives for upgrading drinking water treatment plants to more advanced treatment. Reliance on treatment alone to address water quality concerns for drinking water supplies is poor public policy and runs counter to standard practice in protecting public health. We request that this action be revised to indicate that CALFED does not intend to emphasize treatment as a sole means to address drinking water quality concerns. Reliance on treatment alone to address drinking water quality issues is not sufficiently protective of public health and is not consistent with EPA's source water protection programs. Source water quality protection must be a central component of any CALFED Bay-Delta solution, and the Water Quality Program must include source control actions addressing each of the drinking water quality parameters of concern, where it is feasible to do so.

Page 25
Water Treatment: Action 1: Performance Measure
The performance measure listed is incorrect and needs to be deleted. In those cases where drinking water quality concerns are addressed by upgrading drinking water treatment plants to more advanced treatment, the quality of the water at the drinking water intake will not change and decreased detection of drinking water parameters of concern would not be expected.

Page 25
Water Treatment: Action 2
This action is very broad in scope compared to the other actions, and it addresses issues outside the scope of the Water Quality Program (i.e., relocation of water supply intakes). It essentially encompasses all of the source control actions addressing drinking water parameters of concern, and it also appears to be an attempt to address drinking water quality concerns through a combination of source control actions and implementation of a storage and conveyance alternative that results in relocation of water supply intakes. We agree with CALFED on the need to comprehensively evaluate, as part of the PEIS/EIR, the combined effectiveness of source control actions and implementation of storage and conveyance alternatives to achieve good quality drinking water supplies.

Page 25
Water Management: Action 1
This action addresses beneficial use impairments due to salinity, and proposes to achieve water quality improvements through a combination of water use efficiency measures, water transfers, and storage and conveyance facilities alternatives. While we agree with CALFED on the need to evaluate the combined effects of common program actions and storage and conveyance alternatives on the ability to achieve Water Quality Program objectives, this action does not appear to fit well with the other Water Quality Program actions. CALFED may want to consider moving this item to a section of the PEIS/EIR concerning the combined effects of common program elements and the storage and conveyance alternatives.

Page 27

C-013089

Human Health: Action 1: Methods
The first method for this action includes enforcement of existing source control regulations. Please see the above comment for page 14.
In the third paragraph of the Methods section, "California Department of Public Health" needs to be corrected to read "California Department of Health Services".

Page 35
Table 4. Potential Tools and Indicators of Success for Assessing the Effectiveness of CALFED Water Quality Actions
The discussion concerning the Water Quality Objectives tool needs to be revised to reflect the fact that the existing numerical water quality objectives applicable to water bodies designated as drinking water supplies do not cover all of the parameters of concern to urban water suppliers using the Delta as a source of supply (i.e., bromide, total organic carbon (TOC), salinity, pathogens, nutrients and turbidity). Please see the comment above for page 10.

Page 38
Table 5. CALFED Water Quality Targets for Parameters of Concern
Table 5 needs to be revised to include the most recent recommendations of the Parameter Assessment Team and the Water Quality Technical Group regarding additional parameters of concern and water quality target levels.

Page 42
Table 5. CALFED Water Quality Targets for Parameters of Concern
In order for urban water agencies that treat water supplies to meet potential long-term drinking water quality standards using cost-effective and feasible treatment technologies, the CUWA Expert Panel recommended that source water quality should have concentrations less than 3.0 mg/L for total organic carbon (TOC) and less than 50 □g/L for bromide. GAC or membrane treatment could broaden the allowable source water quality. However, the feasibility of implementing either GAC or membranes, particularly reverse osmosis, is uncertain. Please refer to comments on the Phase II Interim Report, concerning the implications of the Delta conveyance decision on export water quality.

Page 43
Table 5. CALFED Water Quality Targets for Parameters of Concern
We request that the discussion in Table 5 concerning nutrients (nitrate) be revised to reflect the fact that the nitrate MCL of 10 mg/L is not appropriate to use as a desirable in-stream concentration that provides water quality protection for surface water drinking water supplies. Implementation of the 10 mg/L nitrate MCL as a target level for in-stream concentrations would result in significant degradation of water quality. Nutrients are a critical reservoir management issue, and nutrient levels are a determining factor governing the growth of taste-and-odor producing algae in water storage reservoirs.

We request that Table 5 be revised to include the following two narrative target levels for nutrients in the Delta Region:
- No increase in nitrate levels
- Decrease in phosphorus levels

Page 53
Strategies for Phased Implementation: Agricultural Drainage and Runoff
In order to adequately protect environmental beneficial uses, pesticide-related impacts must be addressed in the regions that are tributary to the Delta Region. The third bullet item in this section needs to be revised to read as follows:

- "Reducing pesticide-caused toxicity in the Delta, Sacramento River and San Joaquin River Regions"

Page 54
Strategies for Phased Implementation: Human Health
"Department of Public Health" should be corrected to read "Department of Health Services".

Water Transfers

The Draft PEIS/EIR discusses potential limitations for water transfers, but the graphs and tables can leave the reader with the impression that much more can be transferred on a reliable basis than is actually the case. The potential available capacity for transfers should be characterized by water year type as either reliable (available every year with an acceptable level of certainty) or intermittent (likely to be available, but unknown with any degree of certainty until some point during each water year).

Water Use Efficiency Technical Appendix

Page 1-3, Water Use Efficiency, etc", second paragraph. For clarity's sake we suggest the following modifications: Three ~~Two~~ steps can be taken...Second, CALFED agencies must work with others to identify new opportunities for water use efficiency, including supporting new techniques and technology. Third CALFED agencies must find ways to implement conservation measures that are cost-effective from a state-wide perspective but not from the perspective of the water user or water supplier, without placing additional financial or other local burdens beyond those currently contained in the Urban and Agricultural MOU's

Page 2-1, Program Linkages; water quality. We suggest adding the following to the end of this section: "However, this may also result in long-term degradation of urban and agricultural soils due to salt accumulation"

Page 2-1, Program Linkages; Ecosystem Quality, last sentence. We request the sentence read "This will help reduce the level of future impacts on aquatic organisms to the extent diversions are causing adverse impacts to aquatic organisms."

Page 2-1, Financing. This paragraph inappropriately could be interpreted to imply that additional costs for water to make water use efficiency actions more economically attractive are an end unto itself and that such policy action is recommended. It should be made clear that financing issues needs to be discreetly discussed as part of a comprehensive financing package. We suggest the paragraph be rewritten "...efficiency measures will be made more economically attractive. Apportionment of costs will need to be equitably developed as part of a financing package. This example is illustrative only.

Page 2-5, Urban Objectives, second paragraph. "These Best Management Practices are appropriate for analysis and consideration by ~~almost~~ every agency..."

Page 2-6, General Assurances; first paragraph. This paragraph indicates that demonstration of efficient use "should be met by every water supplier in California, regardless of the supplier's desire to receive CALFED benefits." We find this inconsistent with the geographic scope of the Program. Program actions are otherwise only targeted for program problem and solution areas, emphasizing those actions which will result in improvements in the problem area of the Delta.

Page 2-12, Agricultural Water Use Efficiency Actions, Management Improvements etc. second paragraph. The concept of financial incentives for promoting additional conservation beyond what is locally cost-effective is good and this paragraph should be echoed in the urban section.

Page 2-13, Assurances for Agricultural Water Use Efficiency. The dates in the third paragraph must be revised to reflect changes in the scheduled implementation of the CALFED solution.

Page 2-16, Certification of Water Management Planning. As the CALFED programs are developed there must be a conscious effort to streamline reporting requirements for those agencies needing to comply with new mandates. CALFED needs to address the need to consolidate review requirements for BMP certification for those subject to provisions of the CVPIA and CALFED and coordinate both of these with Urban Water Management Plan reviews.

Page 2-18, Assurances for Urban Water Management and Conservation; second paragraph. We recommend the paragraph be revised to read: "The assurance mechanism described below identifies a central role for the Council. CALFED sought and received the conceptual approval of the Council to take on this role, subject to their further consideration of and approval of the administrative structure of a certification responsibility. Several stakeholder groups are currently working on proposals for assurances that may include certification process recommendations. Such proposals to the extent they gain broad support among the water supplier and environmental communities may become templates for the CALFED approach eventually adopted."

Page 2-23, Assurances for Water Recycling. CALFED should promote adoption of policies aimed at addressing institutional, public acceptance and regulatory constraints that would otherwise preclude the timely development of recycled water. The "No Action" water recycling projection exceeds the practical upper limit that can be achieved without CALFED assistance and may represent a practical upper limit with CALFED assistance. The high end projection for the "With Project" scenario is probably in excess of what can practically be accomplished between now and 2020. CALFED should encourage coordinated water recycling planning among water suppliers and wastewater dischargers.

Ecosystem Restoration and Fisheries

PEIS/EIR Executive Summary

Page 25. The "*List of Issues to be Addressed*" is incomplete because it does not include upstream flow impacts, other than those to storage.

C-013092

Draft PEIS/EIR

Page 5-1. Impact Assessment and Basis of Comparison. "*Although more specific program evaluations may be needed to define the preferred program alternative, the consequences of the preferred alternative will be contained within the range of consequences described in this Draft Programmatic EIS/EIR.*." This statement is potentially misleading because potential upstream impacts were not assessed in the Draft PEIS/EIR. Moreover, it is not likely that the range of consequences, including implementation of Ecosystem Restoration target flows, was captured in the Draft PEIS/EIR because no comparisons were made relative to the existing condition.

Page 6.1-18. Impact Assessment and Basis of Comparison. "*As discussed in Section 6.1.2.3, existing conditions were not simulated in time for inclusion in this evaluation. Instead, the No Action Alternative was modeled, and differences between no action and existing conditions are described qualitatively.*" The Draft PEIS/EIR goes on to state (p. 7.1-31) ..."***Sacramento River Region***. *Differences between the No Action Alternative and existing conditions would primarily be reflected by flow changes ...under the No Action Alternative, Sacramento River and tributary flows would be similar to flows under existing conditions. Operations rules and demands, similar under both the No Action Alternative and existing conditions, would limit the ability to change flow patterns.*" This statement is not supported in the Draft PEIS/EIR, is contradicted in numerous places in the Draft PEIS/EIR (e.g., pgs. 6.1-1 and 9-11), and is not logical. For example, Table 2-1 (p. 2-6) shows that about an additional 1 million acre-feet per year of demand (Delta exports) would occur with the No Action Alternative relative to the Existing Condition.

Page 7.1-31. Impact Assessment and Basis of Comparison. "*Water temperature conditions in most rivers in the Sacramento River Region under the No Action Alternative would be similar to temperature conditions under existing conditions.*" This statement is not supported by any technical evaluations in the Draft PEIS/EIR. No water temperature evaluations were conducted in the Draft PEIS/EIR. Also, the existing condition was not even modeled. Moreover, it is not correct due to changes in instream flows, reservoir carryover storage, coldwater pool depletion and resultant changes in downstream temperatures given additional future demands.

Page 7.1-41. Impact Assessment and Basis of Comparison. "*No additional significant environmental consequences have been identified when program effects are compared to existing conditions as opposed to No Action.*" This statement is not supported by any technical evaluations in the Draft PEIS/EIR. No water temperature evaluations were conducted in the Draft PEIS/EIR. Also, the existing condition was not even modeled. Moreover, it is not correct due to changes in instream flows, reservoir carryover storage, coldwater pool depletion and resultant changes in downstream temperatures given additional future demands.

Page 6.1-1. Upstream Flows. "*Program-induced effects on surface water resources may occur as changes in the timing, direction, and magnitude of flows, changes in water quality, and changes in the amount of water available to meet future water demand. A summary of Program-induced effects is provided in Table 6.1-1.*" Unfortunately, upstream fisheries are not included in this table, nor is it apparent that these topics were assessed for upstream areas. Clearly, "*changes in the timing ...and magnitude of flows*" have the potential to adversely impact upstream fisheries. A thorough examination needs to be conducted given increased future water demand, limited water availability under various hydrologic conditions, carryover effects, and conflicting and competing fishery resource requirements both within (e.g., winter-run vs. spring-run vs. fall-

run chinook in the Sacramento River) and among (e.g., Sacramento River vs. American River vs. Bay-Delta) geographic areas.

Page 6.1-1. Upstream Flows. "*Ecosystem restoration pulse flows and Delta outflow targets result in potentially substantial short term increases in Sacramento River and San Joaquin River flows during selected periods from March to May.*" The Draft PEIS/EIR also states, (p. 6.1-51) "*In May ....the Ecosystem Restoration Program flow targets could result in a significant change in Sacramento River flows for these time periods. The increases would come from additional upstream storage releases. The contributions to the increased flows from the major tributaries would vary, so that larger percentage increases could occur on some tributaries.*" The Draft PEIS/EIR goes on to state (p. 6.1-34) ..."*The modeling assumptions of the Program Alternative configurations were modified to include environmental restoration flow targets.*" The Draft PEIS/EIR assumes that spring is the period most biologically important for the fish species assessed. Although spring is an important period, biologically important periods for the fish species addressed occur throughout the year. The Draft PEIS/EIR neglects to recognize that an increase in spring water releases in upstream reservoirs reduces availability of water in the summer and fall periods, when water may be needed for other species and lifestages.

The impact analysis of environmental effects in upstream areas is so restrictive as to not provide a meaningful comparison of alternatives. Any meaningful impact assessment must address the time periods when the indicator species are present in the rivers, which is year-round.

Page 7.1-28. Upstream Flows. "*Water Surface-Level Relationships. Short-term changes in water surface levels may result in mortality by exposing nests, stranding individuals, reducing or eliminating cover, and other means. <u>The effects of changes in water surface levels are assessed for rivers</u> and reservoirs." [emphasis added*]. This assumption is not correct. As only one example, the higher spring pulse flows recommended in the Draft PEIS/EIR for the American River would not necessarily provide increased habitat availability for chinook salmon or steelhead. To the contrary, high flows during spring would more likely promote stranding and isolation of chinook salmon and steelhead fry, reduce the ability to meet summer (steelhead) and fall (chinook salmon) flow objectives, deplete the coldwater pool in Folsom Reservoir, and directly interfere with the ability for optimal coldwater pool (and flow) management for chinook salmon and steelhead throughout the remainder of the year.

Water Temperature. Numerous locations in the document refer to the importance of water temperature, and state impact conclusions, including the following:

Page 7.1-16. "*In general, distribution and abundance of these species throughout the upper and lower watersheds are affected by <u>water</u> <u>temperature</u>, flows, barriers, entrainment in diversions, fishing, and habitat.*" [emphasis added].

Page 7.1-16. "*Migration of adults and juveniles is also affected by stream flow, <u>temperature</u>, barriers, and other factors*:." [emphasis added].

Page 7.1-21. "*In an effort to capture the "big picture" of beneficial and adverse impacts of the CALFED Program, alternatives were assessed at the ecosystem level by evaluating changes in <u>functional</u> and structural characteristics of the system. The needs of individual species cannot be ignored, thus effects of changes in the environmental variables on species-specific needs are also assessed.*" [emphasis added]. The Draft PEIS/EIR also states (p. 7.1-21) ..."*<u>Functional</u>*

characteristics included in the programmatic impact assessment are flow; water temperature (heat transfer and storage); sediment, nutrient, and contaminant input and movement; and productivity." [emphasis added].

Page 7.1-22. "*In the absence of water temperature data, implementation of actions that increase the flexibility to meet target water temperature conditions or restore natural heat transfer and storage processes are considered beneficial [emphasis added]. Actions that increase flexibility to meet target water conditions include:...*

- *construction of multi-level reservoir release structures,*
- *increased carry-over reservoir storage, and*
- *increased volume of water dedicated for ecological flow and water temperature purposes.*" [emphasis added].

Page 7.1-32. "*Steelhead and chinook salmon are currently restricted to habitat below Nimbus Dam and migration, and rearing conditions may be adversely effected by increased water temperature associated with reduced summer flow relative to existing conditions.*" [emphasis added].

Page 7.1-44. "*Reoperation of upstream reservoirs to meet downstream flow needs potentially increases water temperature, increasing spawning and rearing mortality for chinook salmon and steelhead.*" [emphasis added]

Page 7.1-14. "*Change in Shasta Reservoir operations may increase temperature-related mortality for winter-run chinook salmon.*"

Our comments regarding these references to water temperature are presented below.

The coldwater pool availability in the reservoirs is associated with inflow to the reservoirs, as well as differences in the modeled outflows (timing and magnitude) released. There is no indication in the Draft EIS/EIR that there was any consideration whatsoever of development of an optimal instream flow regime, based on water availability in combination with coldwater pool availability, which varies by hydrologic condition or water year type. Not only did the Draft PEIS/EIR neglect to incorporate optimal coldwater pool management, it did not even address water temperature. No water temperature impact assessment was conducted. The Draft EIS/EIR stated that water temperature models were not available for all watersheds, therefore, no water temperature impact assessment was done.

The Draft PEIS/EIR relied upon DWRSIM for hydrologic modeling purposes. Water temperature modeling is not inherent to DWRSIM. However, output from DWRSIM can readily be input into water temperature models. There are integrated water temperature-flow modeling techniques which are readily available that could have and should have been used for the American River and other rivers, including the Sacramento River (USBR's water temperature models). In fact, regarding operations and alternative implementation scenarios, assessment of how flows might change (either in magnitude or temporal distribution) must include consideration of changes from the base condition in meeting the different temperature control points for the winter-run biological opinion on the Sacramento River. The simple assumption that they will be met does not hold. Numerous studies have shown that water temperature modeling was necessary to make flow release adjustments from Shasta Reservoir to meet winter-run criteria. This also could affect the American River, due to integrated operations of the CVP,

by influencing end-of-month storage conditions as well as monthly instream flow releases, because adjustments need to be made if those winter-run criteria are not met.

Changing the temporal diversion pattern of outflow from upstream reservoir's will change subsequent downstream water temperatures. For example, changing the outflow amounts and the subsequent change in the vertical elevation of water withdrawals from Folsom Reservoir during early spring months could have serious consequences through the summer and/or fall. The recent listing of steelhead as a federally threatened species has resulted in an optimal coldwater pool management strategy which emphasizes maintaining the coolest water possible throughout the summer while balancing for the needs of chinook salmon spawning in the fall. Without consideration of water storage in the context of optimal coldwater pool management, there is a very strong potential that assessments (and subsequent implementation of a proposed action) simply using flow models, without using integrated flow-temperature modeling techniques and applying them to optimal management strategies, would potentially significantly impact downstream salmonid resources in the lower American River, the Sacramento River, and other tributaries to the Bay-Delta.

Phase II Interim Report

Page 133. The "*Significant Technical Distinguishing Characteristics*" does not include upstream flows or water temperature.

Ecosystem Restoration Program Plan, Volume I

General Technical Comments

Need for Scientific Documentation: The lack of technical references is a major flaw in the present document and one which severely undermines the credibility of the document.

We strongly support the basic objective of the CALFED Ecosystem Restoration Program Plan (ERPP) which is "to improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species." Moreover, the general goals and objectives of the various volumes are not objectionable; indeed many are strongly supportable. However, the lack of details regarding when and how the goals and objectives are to be achieved in specific locations makes constructive criticism difficult.

The ERPP contains many statements presented as fact which are not supported by any technical reference/citation. Given the degree of controversy that exists relative to the Bay-Delta system, it is critical that the technical information presented and interpretations made thereof be properly cited in the text. This is important so that reviewers are aware of and can obtain (if desired) the documents and publications which are being used to build the foundation for needed changes. Disagreements are bound to exist, but so too are areas of agreement. Important technical references must be included.

In many instances, the actions proposed do not fully address the identified reasons for decline. For example, in the stressors section under water diversions, a number of factors are described as effects of water diversions, but all of the identified actions are fish screening options at various locations. Close examination of all of the proposed actions will reveal that many of the supposed

stressors and the factors effecting the ecosystem do not match up very well.

A major focus of the ecosystem processes and functions discussion deals with increasing natural sediment supplies. However, the discussion of stressors dealing with dredging and sediment disposal discusses the impacts of increased sediment loads in the Delta including siltation of channels, increased flood potential, filling of backwater areas, increased turbidity, and disruption or destruction of benthic communities. These two objectives seem to be inconsistent.

Need for Description of Methods: The methods and procedures used by the CALFED staff need to be fully documented.

Specific watersheds (e.g., Battle, Mill and Deer Creeks) offer major opportunities to expand the geographic range of chinook salmon. Such opportunities to generate nearly immediate benefits are not acknowledged in the draft ERPP. Correcting the fish passage and diversion problems should be a high priority. The apparent effort to standardize stressors, ecological processes and habitats across the entire landscape is in conflict with prioritizing limited resources. The ERPP should initiate activities in the early phases to alleviate direct mortality, where there is broad agreement.

Page 27. The text states that a general target for streams with major impoundments is to provide a spring flow event. The programmatic action calls for passing a portion of the natural inflow through reservoirs in order to provide for a spring (March - May) event. The ERPP recommends providing these spring pulse flows even if summer storage releases have to be decreased. Because of the pending listing of Central Valley fall-run Chinook salmon, the highest priority must be to preserve over-summer reservoir carryover storage and adequate cold hypolimnetic release water volumes to provide suitable river conditions for fall-run Chinook salmon upstream migration and for oversummering anadromous juvenile rearing and development. In addition, spring pulse flows may create substantial impacts through premature outmigration and elevated loses due to predation. These impacts have not been addressed.

The ERPP continues to promote winter and spring peak flows. In recent years, research on a number of tributaries and the Delta has shown that high winter and spring peak flows would force salmon fry out of the freshwater rearing habitat and into the Delta where rearing conditions are less favorable and spring peak flows attract striped bass closer to areas where juvenile salmonids are vulnerable to excessive predation losses. The release of these peak flows, even if they are of the magnitude of a 1.5 or 2.0 year natural event will lower reservoir storage and may make it impossible to provide suitable downstream river temperatures in the fall when adult chinook salmon and steelhead begin their upstream migration. In setting flow targets, CALFED needs to more carefully consider the integration of stream flows, temperature, and reservoir carryover storage necessary to meet temperature/quality objectives.

While institutionally complex, management of harvest and hatcheries needs to be part of the solution. The ERPP vision summary for fish and wildlife harvest calls for the maintenance of sustainable commercial and recreational fisheries in a manner consistent the recovery of individual stocks. In order to achieve this goal, harvest strategies would have to be set to protect weak natural stocks and the Pacific Fishery Management Council would have to evaluate the exploitation rates on a stock by stock basis. This management approach would be a major departure from the current management practice of aggregating a number of Central Valley stocks as a single management unit. The only option to achieve both goals may be to conduct

selective fisheries which harvest only marked hatchery fish, but the incidental mortality on wild fish will have to be evaluated to determine if weak natural stocks can recover with higher levels of incidental catch mortality. These alternatives should be considered.

Since the ERPP is intended to recover native species, it is baffling to strongly support increasing non-native populations that have a substantial impact on native species. The text specifically mentions the role that striped bass plays as a top predator in the aquatic system. We believe that this ecosystem evolved without a true apex predator in the fish community. Yet strong support is given to increasing adult striped bass populations. In addition, support for species such as white catfish and threadfin shad is not biologically or ecologically justified.

Page 4. Ecological zones, ecological process, ecological (ecosystem) elements. This is confusing. We urge that you combine thinking and narrow definitions.

Page 5. Vision, objective, target, action. Too many divisions results in confusion. Simplify! Recommend use of the term Objective - Drop the term "Vision" throughout the entire document.

Page 7, Table 1. The rationale behind the order in which the ecosystem elements are presented in Table 1 is not clear. There is tremendous overlap between the different elements such that the value of separating and discussing them individually is questionable. This overlap is reflected in the writeups provided in the individual sections. We recommend consolidation of these; this would reduce redundancy, as noted above. A diagram would be useful to illustrate the interrelationships. Figure 2 is much too general and does not present relationships correctly or adequately. Suggest omitting the Vision Summaries.

Page 8-15. The rationale for the order of items presented in the different tables is not clear. Highest to lowest priority? If so, the text should present the rationale; if not, the items should probably be listed alphabetically.

Page 8. Central Valley Stream Temperatures. The vision to restore natural seasonal patterns of water temperatures in streams, rivers, and the Delta will certainly impact some populations of fall chinook salmon which have adapted to flow regimes in regulated rivers. The ERPP should attempt to balance restoration objectives with current fisheries realities.

Page 10. Species and Species Groups. The ERPP should ensure that the most current information is provided and presented in the table; e.g. splittail - are they or will they remain on ESA candidate list, recent listing of steelhead, etc... We recommend inclusion of scientific names for each of the species listed. The document needs to follow a general scientific format, even though it is geared more toward laypersons.

Pages 13-14. It is not clear if the stressors are presented in order of significance? If so, what are the rationale, if not, then they should be presented alphabetically. As is, the text gives the reader the impression that there is likely some significance to the order; i.e. water diversions are number one problem. The stressors list should be complete.

Page 14. Artificial Fish Propagation. This is a complex subject, because artificial propagation is more than just a stressor. As presented, it appears to factor closely into the actual restoration of various salmonid stocks. However, its listing as a stressor suggests it is BAD and should be eliminated, similar to contaminants. This vision summary needs careful re-writing.

C-013098

Page 13. The designation of Stressors as Ecosystem Elements and the associated categories assigned in the definition of Ecosystem Element on Page 4 is questionable. We suggest this definition be appropriately cited. The contrast is striking between this definition and Odum's (1959) classic definition of the components of an ecosystem as being comprised of 1) abiotic substances (organic and inorganic compounds of the environment); 2) producers - autotrophic organisms (largely plants); 3) consumers; and 4) decomposers. Stressors do not fit into the definition. Because the ERPP revolves around and continually uses the term ECOSYSTEM, this should be clearly defined (and references cited).

Page 15. Consideration of "Disturbance" as a stressor is questionable. Essentially all of the previously mentioned stressors can likewise be considered as Disturbances. The definitions could be improved by replacing them with improved descriptions of what they actually are.

Pages 16-20. Much of this section is redundant with the tables and discussion presented in the previous section. The only difference is largely in the replacement of the term Vision Summary with Implementation Objective. Consider consolidating the two and eliminating use of the term Vision.

Page 18. Natural Sediment Supply. Including "woody debris" as part of the sediment supply is inappropriate, since it clearly is not sediment. Sediments generally refer to the substrate materials that comprise the stream bed within rivers and streams, as well as materials (coarse particulates) transported either in the water column or via suspension and bedload transport. In some cases, organic materials can constitute at least part of the sediment content; e.g. organic sludge/effluent from a wastewater treatment plant, but that material is comparatively small and comparable to fine sediments. We know of no instance nor can cite any reference where woody debris has been included in the definition of natural sediments.

Pages 21-26. In spite of being one of the more important determinants of fish and aquatic resource production, only one reference has been added since our last comments to support statements presented as factual information within the text. We would expect this section to have one of the larger reference sections. This needs to be addressed.

Page 25. Reference is made to CVPIA (subsection 3406(b)(2) as addressing issues of Central Valley streamflow. This begs the question then, what role will the ERPP have in addressing this issue? Clearly, some distinction and explanation is needed up front; i.e. as part of the introductory material, in order for the reader to understand the interdependencies of different programs. This is especially important relative to the CVPIA programs.

Page 26. Under programmatic actions, this volume describes one of several ways to meet the streamflow objectives as "Provide sufficient high flows during spring (March May) to sustain high flow dependent ecological functions. This can be accomplished by allowing a portion of the natural inflow to pass through large Central Valley reservoirs in spring of all but the driest years. In extreme cases, this may be accompanied by reductions in high summer storage releases". We see three potential problems. First, the description of this action leads the reader to believe that this action should be accomplished every year. This raises the question as to whether these flow levels are needed every year to maintain the ecological processes and functions described. Maybe alternate years are sufficient? Second, allowing some portion of spring flows to pass through every year will reduce the storage in Central Valley reservoirs, with potentially major

impacts in subsequent drought years. Third, the proposed reduction in high summer storage releases in extreme cases has two major impacts, reduced water deliveries during the summer months and reduced south of Delta storage levels during the fall months.

Page 47. The text states that the growth of young salmon and steelhead is generally optimal in the 50 to 60° F. range. This temperature range is too low for optimal salmon and steelhead rearing in Central Valley streams. A more suitable temperature range would be from 54 to 61° F.

Page 51. This page is missing and probably described the background material for Delta hydraulic processes. However, on page 52, under the vision section, a sentence states "Historical hydraulic conditions provided migratory cues for aquatic species; transport flows for eggs, larvae, and juvenile fish; and transport of sediments and nutrients". Linkages are made to several species. Under the section entitled "Implementation Objective, Targets, and Programmatic Actions", reference to establishing hydraulic conditions similar to the 1960's when the estuary was in a healthy state. This type of statement only tends to polarize the scientific data arguments. This is another example of a conclusion statement that is not substantiated by a scientifically rigorous examination of the data. In addition, it is highly questionable that Delta hydraulic conditions provide migratory cues for aquatic species. Migratory cues are determined by many other parameters but these factors are not mentioned. There is also the implication that the estuary was healthy in the 1960's and now is not. The implicit assumption is that the estuary will respond the same now as it did in the 1960's if the hydraulic processes are duplicated.

Page 53. The last paragraph suggests that tradeoffs between carryover storage and increased releases for temperature control can be best made by an adaptive management team. Even under an adaptive management program, no decisions should be made without: 1) extensive temperature modeling using readily available tools such as SNTEMP (Stream Network Temperature Model) and WQRRS (Water Quality for River Reservoir Systems); 2) verifying this modeling work on a river-to-river basis considering basin hydrologic variations; 3) all upstream impoundment operations must be known and alternative release depths for sluicing and/or power generation must be available along with routine reservoir profiles in order to adaptively make these decisions, and 4) appropriate representation in the adaptive management decisions must be assurred.

Pages 54-60. Two technical points that were not addressed in this section: 1) Construction of Shasta Dam and others likely had a substantial effect on the amount of nutrients (both autocthonous and allocthonous) that were being transported downstream from upper watershed areas. This material (e.g. leaf litter, salmon carcasses, large organic debris, etc..) has essentially been removed from the system. 2) During the 1960s-70s there was a tremendous push to reduce and eliminate the amount of waste water and sewage effluent that entered the Bay-Delta system. This resulted in the construction and subsequent operation of many new secondary treatment facilities that effectively reduced the amount of nutrient loading to the system. The loss of sewage effluent and associated nutrients may have contributed to the decline in primary production of the system. This has likewise been noted in other estuarine systems including Chesapeake Bay. This should be mentioned as a possibility. This section needs appropriate citations.

Pages 116-120. Are the directives/objectives for any of the species incompatible with objectives of others; e.g. is the restoration of striped bass populations to levels found in 1960s compatible with trying to restore runs of winter run chinook salmon, delta smelt, and other species? We

believe it is not compatible, and furthermore, believe there are likely other species objectives for which implementation of certain measures could jeopardize recovery or restoration of other species. This needs to be carefully thought out and presented in a fashion which addresses this issue. Is CALFED going to promote programs for species which may be antagonistic? Are the measures proposed going to be evaluated in the context of ecological risk to other species?

Pages 141-149. This section has implementation objectives for maintaining both water temperatures for salmon and steelhead spawning (less than 57° F) and over-summering (less than 65° F). It will be very difficult to achieve both temperature objectives in Central Valley streams because of limited coldwater pool storage in many reservoirs.

Page 149. The section on resource description of Chinook salmon needs to be updated and should reference the NMFS proposal to list Central Valley spring- and fall-run Chinook salmon. The draft states: *"The NMFS is reviewing the status of the other Central Valley Chinook salmon runs (other than winter run) and is considering the potential needs for additional listings under the ESA."* This statement is now out-of-date. Given the importance of the CalFed ERPP to the final listing decision, the ERPP must clearly include the elements for a Chinook salmon recovery plan that will preclude the need for listing the Central Valley spring- and fall-run Chinook salmon ESUs.

Page 152. Integration with other restoration programs. The NMFS Essential Fish Habitat program must be added to the list of restoration programs, and the potential impacts of this program for covered species and their habitats needs to be described in the document.

Page 252. Why omission of Striped Bass as one of the stressors/introduced species. This issue has been raised before and can not be omitted from consideration in this document.

Page 270. First paragraph under predation and competition. The sentence that reads "Predation on hatchery produced steelhead" should probably be in referenced to hatchery chinook. Observations by EBMUD fisheries biologists and consultants have shown that hatchery steelhead planted in the lower Mokelumne River do not migrate out rapidly and instead a significant number of steelhead yearlings migrate upstream and residualize in the river.

Page 275. The contaminants section under stressors is inadequate to address the contaminant issues in the Central Valley. The description of the problem is understated and the implementation objective, targets, and programmatic actions described are inadequate to address the problem. Recommend this entire section be rewritten.

Page 291. The section on artificial fish propagation under stressors is an incomplete and misleading description of the problems. The section fails to discuss the impacts of hatchery management practices on harvest rates and the effects of trucking juveniles to downstream locations on straying rates and genetic effects.

Page 341. The text states that adult steelhead harvest should be directed to steelhead produced in the Coleman National Fish Hatchery, Feather River Hatchery, Nimbus Hatchery, and Mokelumne Hatchery. This vision on steelhead harvest, must consider the fact that both the Coleman and Feather River Hatchery steelhead are part of the Central Valley ESU, whereas the Nimbus and Mokelumne hatcheries' steelhead were not included. While none of the Central

Valley hatchery steelhead populations have been listed by NMFS, more information is needed before a statement on the harvest policy on Central Valley steelhead can be made.

Ecosystem Restoration Program Plan, Volume II

General Technical comments
Volume II of the Ecosystem Restoration Program Plan (ERPP) states the ERPP is not designed as mitigation for projects to improve water supply reliability because the program is co-equal to the other CalFed programs for water supply reliability, water quality, and levee system integrity. If this statement is true, the CalFed ERPP will take away the vast majority of the habitat restoration options that are available to mitigate for project operations or conveyance alternatives. The ERPP would, therefore, make it almost impossible to mitigate for future projects since most of the feasible restoration projects will have already been considered as part of the ERPP. Since the ERPP is establishing a new environmental baseline, it will also be difficult if not impossible to gage the performance of any new mitigation project in terms of its specific benefits or impacts to the Bay-Delta ecosystem.

The authors state the ERPP will be an important component in the recovery measures for listed species under the state and Federal ESAs. Instead of being just a component of the recovery measures, the restoration actions identified in the ERPP appear to be sufficient to satisfy all of the requirements for the recovery plans for any of the listed or candidate species.

Important references are still missing in the ERPP. For example, the ERPP does not reference the substantial fisheries investigations that have been conducted on the lower American River under the special master for the Hodge Decision (EDF v. EBMUD, Alameda County Superior Court No. 425955). The latest information on the abundance of native species such as Sacramento splittail (candidate species) is also missing.

The ERPP is inconsistent in the treatment of restoring natural ecosystem conditions. For example most targets in the ERPP are related to some natural process except for instream flows below Central Valley dams. The ERPP recommended instream flows exceed natural unimpaired flows in many cases due to the lack of hydrologic modeling by CalFed. And, the ERPP does not justify the instream flows that have been recommended. Throughout the ERPP the flow targets include pulse flows, provided that inflows to upstream storage reservoirs are sufficient. The criteria to determine if inflows are sufficient (see page 301) must be clearly stated for each river system, and the benefits and impacts associated with these pulse flows must be identified.

The ERPP has targets to develop harvest management strategies that will fully utilize the restored and existing habitat to achieve natural spawning salmon and steelhead run sizes to achieve cohort replacement rates greater than or equal to one. In addition, the ERPP suggests the development of harvest management plans for American River Chinook and steelhead in order to meet target escapement and production goals. The National Marine Fisheries Service in their proposal for restoring Essential Fish Habitat uses the number of carcasses to sustain riverine ecosystems as the target instead of cohort replacement rates. NMFS is undertaking this approach in order to manage resources on an ecosystem level instead of on a species specific level as implied by the ERPP targets. Cohort replacement rates should be utilized by the Federal and state resource agencies and the methodology used must be consistent. Carcass surveys have been found to grossly underestimate escapement.

The ERPP Volume 2 contains language on the speculated threat of hatchery reared fish "contaminating" wild stocks of Chinook salmon and steelhead. This statement is not supported by the available scientific literature. In fact, there is little information upon which to evaluate the genetic impacts of Central Valley salmon programs on naturally spawning populations. An alternative hypothesis is noted on page 345 of Volume 1 of the ERPP:

> "...the great genetic similarity among all Central Valley Chinook populations makes it difficult to detect genetic impacts from hatchery releases. An alternative hypothesis that cannot be disproved with present data is that Central Valley hatchery stocks have diverged little from their wild ancestors, in which case the near term genetic impacts of hatchery programs might be minimal."

Given the scientific uncertainty over the genetic effects of hatchery fish on naturally-spawning Chinook salmon, CalFed needs to refrain from using language that is derogatory of hatchery programs or hatchery fish in general.

The ERPP includes focused habitat restoration actions on introduced and native species. Only native species should have focused actions. Special attention needs to be focused upon actions to rebuild populations of spring- and fall-run Chinook salmon to prevent them from being listed. In the March 9, 1998 Federal Register Notice (50 CFR Parts 222, 226, and 227), NMFS proposed threatened status for Central Valley fall-run Chinook salmon and endangered status for Central Valley spring-run Chinook salmon. In reference to the CalFed Bay Delta program, NMFS says:

> *"The degree to which these conservation efforts provide reliable, measurable and predictable reductions in the identified factors for decline, may provide NMFS with direct and substantial information pertinent to making final listing determinations for Central Valley Chinook stocks."*

Because of the current NMFS listing proposal, it is imperative that the ERPP refocus the attention now aimed at restoring habitat for introduced species to restoring habitat for fall-run Chinook salmon or on any native species.

Volume 1 of the ERPP states that targets must be based upon realistic expectations. The language states:

> *"Targets are to be set based upon realistic expectations, must be balanced against other resource needs and must be reasonable, affordable, cost effective, and practicably achievable."*

Many of the targets in the ERPP fail to meet this basic criteria and must be revised. Some examples are provided in the specific comments to follow.

Page 2. The text states the ERPP is not designed as mitigation for projects to improve water supply reliability because the program is co-equal to the other CalFed programs for water supply reliability, water quality, and levee system integrity. If this statement is true, the CalFed ERPP will take away the vast majority of the habitat restoration options that are available to mitigate for project operations or conveyance alternatives. The ERPP would, therefore, make it almost impossible to mitigate for future projects since most of the feasible restoration projects will have already been considered as part of the ERPP. Since the ERPP is establishing a new

environmental baseline, it will also be difficult if not impossible to gage the performance of any new mitigation project in terms of its specific benefits or impacts to the Bay-Delta ecosystem. The authors state the ERPP will be an important component in the recovery measures for listed species under the state and Federal ESAs. Instead of being just a component of the recovery measures, the restoration actions identified in the ERPP appear to be sufficient to satisfy all of the requirements for the recovery plans for any of the listed or candidate species.

Page 17. Text in the fifth paragraph states that the Delta's Sacramento splittail population declined during the drought. This statement needs to be updated with the latest Sacramento splittail trends of abundance .

Page 18. Text in the first paragraph states that artificial rearing or supplementation of striped bass may be necessary to sustain the population under the present conditions. While that need may be true, striped bass are an introduced species to the Bay Delta and have been documented to be significant predators on native fish species. Therefore, augmented production of striped bass must not be included in the ERPP.

Page 39. Central Valley Streamflows. The statement implies that streamflows will maintain the entrapment zone and natural salinity gradient and will support striped bass spawning habitat. This target is vague and too broad in its potential application. Where is the entrapment zone to be located and can it be maintained by streamflow given that Volume 1 of the ERPP states that targets are to be set based upon "realistic expectations and balanced against other resource needs?" The location of the entrapment zone varied under historic natural Delta hydraulic conditions and attempting to maintain it in one location is unnecessary. In addition, the natural ebb and flood of the tides would make this virtually impossible.

Page 39. Programmatic action 1A prescribes March outflows from a number of Central Valley streams including the American River. The timing of these flows must be reviewed because of the downriver displacement of juvenile fall-run Chinook salmon fry from upstream rearing areas and elevated predation impacts. In addition, the additional March outflows could very well substantially reduce or eliminate the cold hypolimnetic volume in Folsom necessary to provide adequate coldwater for the lower American River in the summer and fall.

Page 41. The text provides the rationale for supplementing flows in late April and early May. The rationale is to assist juvenile Chinook salmon moving through the Delta and the Bay. Water for the pulse flows would be purchased from willing sellers on a number of tributaries including the Mokelumne River. There is no evidence documenting that pulse flows will accomplish this objective, or that the objective is necessary or beneficial. Factually, pulses would create different impacts then current conditions and these must be carefully assessed on a river-by-river basis. In addition, all water rights holders on the Mokelumne River have definitively stated that such flows are currently not available.

Pages 43-58. The discussions concerning specific habitats indicate a high degree of specificity relative to the quantity (area, lineal miles, etc.) of habitats needing to be restored, enhanced, etc.. (e.g. page 43: 1000, 1000, 2000 acres of shallow water habitats are proposed for creation, etc...). More then ever, this begs the question as to how were these numbers determined. The Executive Summary which was released in April provided these same numbers for a given Zone and Unit, and it was anticipated that the full documents (Volumes 1 and 2) would provide the necessary background materials that would describe how the numbers were developed. However, this is not

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the case, and the reader remains uninformed as to how the estimates were derived. This is a major flaw with this document and one which cannot be ignored or dismissed by CALFED. There are major funds being committed as part of the program, and stakeholders and public entities must be fully informed as to how decisions that will directly affect the expenditure of such funds have been made. Credibility and accountability are two aspects of the ERPP that should have been used as guideposts in the development of these documents.

Page 270. Improving March through May flows may have only marginal benefit to outmigrating fall chinook salmon since recent studies have shown that most of the salmon leave the river system as fry.

Page 302. Programmatic Action 3C for the American River. Text in the third paragraph states that late non-flood control releases during the winter and early spring will be maintained at a level sufficient to attract adult steelhead and American shad during their spawning runs. Flow targets for the American River must not be based on providing attraction flows for the introduced American shad. The water that would be used for these attraction flows must be retained in Folsom and utilized to benefit native species such as fall-run Chinook salmon.

Page 305. Target 1A calls for maintaining a water temperature in the lower American River at or below 60° F beginning as early in October as possible. The target is assigned three diamonds, but should be assigned only one diamond based upon the experimental nature of the programmatic actions listed on page 306.
Page 311. Artificial Propagation of Fish. There is a target to minimize the threats of hatchery fish contaminating wild stocks of Chinook salmon and steelhead on the lower American River, yet under "rationale" on the same page a statement is made that irreversible contamination of the genetic integrity of wild stocks has already occurred. This is conjecture stated as fact and the target should be eliminated.

Page 311. Programmatic Action 3B calls for a program to coded-wire tag a representative proportion of Chinook salmon reared at the Nimbus Hatchery. The program should also call for tagging a portion of the natural in-river fish production.

Page 312. The target calls for the reduction of herbicides and pesticides on agricultural lands that have the greatest risk to fish and wildlife populations, yet the target is assigned only one diamond. If these pesticide and herbicide applications pose the greatest risks, then the target should be assigned three diamonds.

Page 313. The major programs are listed that have been developed to restore Chinook salmon populations in the Central Valley. The National Marine Fisheries Service program on Essential Fish Habitat must be added to this list.

Page 314. Programmatic action 2A calls for a feasibility analysis of re-introducing steelhead into the American River above Folsom Dam. A paragraph should be added to identify the potential risks from this program since re-introducing steelhead above the dam would create the opportunity for them to interbreed with hatchery rainbow trout that have been used to stock the recreational fisheries in the basin for decades. This re-introduction could also foster an epidemic response in the reservoir above the Nimbus Hatchery which must be avoided.

Page 317. Paragraph 3 states that highly variable flow and habitat conditions have resulted in

widely varying population levels of chinook salmon, steelhead, American shad, and steelhead. There are other major factors such as general climatic variations, oceanic conditions and overharvest that can cause these populations to fluctuate. These factors need explicit acknowledgment.

Page 321. American shad should be deleted, as it is not a focus species in the lower Mokelumne River vision.

Page 324. Visions for chinook salmon and steelhead trout should include the following bullet items: "managing legal and illegal harvest to improve and protect naturally spawning fish."

Page 353. Target 4 identifies spring pulse flows for the Mokelumne River. There are no conditional provisions for providing this action such as having sufficient inflows or available reservoir carryover storage and having an adequate cold hypolimnetic volume. Similar provisions were identified in other Central Valley river systems where pulse flows were identified as a programmatic action. In addition, there is no evidence that such a pulse flow would be beneficial or effective and there is evidence to suggest it will create impacts. The evaluation of these impacts must be included in the ERPP or the target should be eliminated.

Page 352. Programmatic action 2B conflicts with programmatic action 1D. Action 2B is to maintain or enhance summer or fall base flows on the Mokelumne River by development or purchase of new water supplies. Action 1D calls for managing the Pardee and Camanche Reservoirs through October to maintain a coldwater hypolimnetic pool volume of 28,000 acre feet in Camanche when Pardee Reservoir's total volume exceeds 100,000. Again, there are no conditional provisions for providing this action, there is not an assessment of the impacts associated with augmenting summer or fall instream flows and there is not currently a willing seller within the water-right community.

Page 364. Target 1 for Harvest of Fish and Wildlife calls for developing harvest management strategies in order to fully utilize existing and restored habitat. This target needs to be linked with the Chinook salmon target for a cohort replacement rate of greater or equal to one (see bottom of page 366).

Page 368. The statement about summer flows in the Tuolumne River should recognize the flows required in the 1996 FERC Settlement Agreement. In addition, the USFWS agreed to support the FERC settlement flows as the flows for the Tuolumne River. The reference to the 1995 AFRP flows for the Tuolumne River should be deleted.

Page 369. The discussion should recognize LaGrange Dam was constructed between 1891 and 1893 and has blocked the migratory pathway of the Chinook salmon above LaGrange Dam on the Tuolumne River for over 100 years. Also, salmon spawning and smolt production on the Tuolumne River is above much of the predator habitat. In addition, the statement that "Unnaturally high summer flows in the spawning and rearing areas below the dams from storage releases for irrigation sustain large predatory fish" is incorrect and inconsistent with the statement on page 368 that states that "Summer flows range from less that 10 to 50 cfs in all but wet years". In actuality, all major irrigation diversions occur above the salmon spawning areas on the Tuolumne River.

Page 375. The vision for the Tuolumne River Ecological Unit indicates a continued effort to

restore streamflow. This is unacceptable. The USFWS, CDFG, the irrigation districts, the CCSF and several environmental organizations agreed by signing the FERC settlement agreement to support the instream flows specified in that agreement as the flows that would be necessary for the Tuolumne River for at least 10 years. The ERPP should recognize this agreement.

Groundwater Resources

Draft PEIS/EIR, Chapter 6.2.

The discussion of groundwater resources very generally analyzes assumed groundwater storage programs of 250 TAF in the Sacramento Valley and 500 TAF in the San Joaquin Valley. Unfortunately, the description of these groundwater storage programs is too general for a reader to determine whether certain areas where such programs are feasible are covered in the analysis. For example, the Ag-Urban Water Caucuses has identified potential conjunctive use storage projects east of the Delta involving the Mokelumne, Calaveras, Stanislaus and Farmington basins, which have the potential to generate water supply benefits for local water users and dry year yield for others, and to increase environmental flows for fishery requirements in east side tributaries. Local interests are currently pursuing these opportunities, which could be available for early implementation (1 to 3 years). It does not appear that the potential use of these east of Delta basins has been considered.

Additionally, the Ag-Urban Water Caucuses has identified groundwater storage opportunities in export areas such as Kern County and the Madera Ranch, which could provide storage capacity of more than a million acre-feet. While the Draft PEIS/EIR does assume 500 TAF of groundwater storage in the San Joaquin Valley, whether the analysis is adequate to encompass the areas or amounts identified by the Ag-Urban Water Caucuses is unclear.

CALFED should ensure that its Revised Draft PEIS/EIR contains analyses of these groundwater storage opportunities sufficient to support their implementation as appropriate.

Draft PEIS/EIR Page 6.2-1, No Action Alternative. Subsidence has occurred in the Sacramento Valley and is likely to continue occurring under the no-action alternative.
Alternatives 1&2. Last paragraph. Impacts identified are not just water quality as labeled.

Page 6.2-2, Table 6.2-1, Delta Region. Alternatives 2B, 2E, 3B, 3E, and 3I would cause impacts to groundwater levels that would not be caused by other alternatives.

Page 6.2-3, Ecosystem Restoration Program. The ERP will purchase surface water from current users to release in streams. The reduction in surface water will cause reductions in groundwater recharge that will affect groundwater levels, quality and storage. Such impacts are not described in the Draft PEIS/EIR.

Coordinated Watershed Management Program. It is not clear how the watershed management program would improve declining water levels in the upper watershed.

Water Use Efficiency. Any improvement in groundwater recharge resulting from EWMP's is likely to be relatively small, and would be extremely unlikely to completely offset adverse impacts of improved on-farm water use efficiency.

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Section 6.2.1.1. The section on groundwater hydrology appears to apply to upper watersheds and is so general as to not be useful. Suggest eliminating.

Page 6.2-4. The second bullet in Section 6.2.1.2 appears to be outdated. Currently, a large number of districts in California have groundwater management plans under AB 3030, not a "small fraction of the State's groundwater."

Page 6.2-5, Historical Perspective. The second and third paragraphs in this section do not appear to belong here. Outside of the discussion on the Delta, the Draft PEIS/EIR apparently does not adhere to the Bulletin 118-80 definitions of groundwater basins. If the Draft PEIS/EIR does not keep the Bulletin 118-80 definition of groundwater basins, then they don't need to be mentioned.

Existing Conditions. Have large amounts of Delta peat soils really been mined?

USGS Professional Paper 1401-D indicates that the Delta, under pre-development conditions, was an area of discharge, implying that recharge would not occur primarily from Delta channels, but rather to Delta channels.

Oxidation of peat actually destroys soils, not just the material underlying soils.

Bay Region, Historical Perspective. Only relatively small portions of Bay Area aquifers have been subject to seawater intrusion and subsidence.

Page 6.2-7. Groundwater conditions in the Santa Clara County Basin are exceptional, rather than typical, of Bay Area groundwater. Outside of the Santa Clara County Basin and the Niles Cone area, Bay Area groundwater is not widely used and has not experienced seawater intrusion or subsidence.

The discussion of surface water supply sources lists CVP and SWP imports from the Delta before other sources. Actually, the other sources far exceed the Delta imports.

Page 6.2-8. Subsidence typically results in the compression of clays, not the sand and gravel material that provide the major productive portion of an aquifer.

Page 6.2-9. Existing Conditions. It is not clear why the groundwater depression in south Sacramento County is highlighted when depressions also exist in other areas of the Sacramento Valley (e.g, western Yolo County). Also, why is the Sacramento County depression described as "severe" when other, deeper
depressions in the San Joaquin River Valley are not described as severe?

Natural groundwater quality is excellent in most of the Sacramento Valley, not throughout the Valley.

Page 6.2-10. The groundwater boundaries and features shown on this map appear to be displaced somewhat to the west.

Page 6.2-12. The definition of the San Joaquin River Region does not match standard definitions of the area. Normally, the San Joaquin Basin is defined to be the area north of the San Joaquin River near Fresno.

The discussion of subsidence does not clarify that it was completely stopped with the introduction of surface water in the late 1960s and early 1970s in the Los Banos-Kettleman City area. Subsidence occurred again beginning with reductions in surface water deliveries resulting from restrictions in
surface water supply from the Endangered Species Act and the CVPIA.

The discussion switches from the modified E clay to the Corcoran Clay, which are essentially the same. Suggest sticking to one term (probably modified E clay).

Page 6.1-17. Groundwater is not the principle source of water in inland desert areas. Imported surface water is a major source in many inland desert areas (e.g.., Antelope Valley-East Kern Water Agency, Mojave Water Agency).

The northern half of the Colorado Desert Region is not in the service area of Mojave Water Agency and the southern half is not in the service areas of Coachella Valley Water District and Desert Water Agency.

Page 6.1-18, Bay Region. Discussion of groundwater impacts in the Bay Area appears to be erroneous.

Sacramento River Region. Groundwater levels have not continued to decline in the Sacramento County and Yolo County areas. For the most part, depressions were created in past decades that have remained relatively stable for recent decades.

The Sutter Buttes area is not a major groundwater extraction area.

Information has not been presented to indicate that groundwater recharge would be reduced in the upper watersheds and it seems unlikely that retention capacity would decrease.

Page 6.2-19. It is not clear that increased demands in the upper watershed would have any significant effect on groundwater levels.

San Joaquin River Region. The discussion of increased population causing increased agricultural groundwater use does not represent past experience.
Although water rights for municipal uses generally have higher priority, agricultural water users in the San Joaquin Valley generally have the water rights.

The "increased potential for subsidence" is more than potential and has already occurred in western Fresno County.

Page 6.2-20, Delta Region. Proposed surface water storage sites are located outside the Valley floor in areas of generally low permeability that are not hydraulically connected to the Valley and would be unlikely to result in significant recharge.

Page 6.2-21, Bay Region. Storage and Conveyance. By providing increased surface water supplies to water users in the Bay Region, the storage and conveyance program would be expected to provide improved groundwater conditions.
Groundwater use would be decreased by substitution of surface water and the potential for groundwater recharge would be increased.

Page 6.2-24. The description of in-lieu recharge is wrong. In-lieu recharge provides increased groundwater storage by reducing pumping, not by any change in recharge.

The discussion of difference in chemical or biological properties of recharge water should not be included. Currently, there is a wide variation in chemical and biological properties of recharge. For the small amount of recharge resulting from a storage and conveyance program, it is unlikely that there would be any impact identifiable.

Alternatives 2 and 3. Ecosystem Restoration. The impacts of water purchase and resulting impacts to groundwater of fallowing or groundwater substitution are not described.

It seems incomprehensible that any program would cause significant impacts to upper watershed groundwater.

Page 6.2-25. The discussion of EWMPs should clarify that optimized conjunctive use could partially offset adverse impacts from improved on-farm efficiency.

Several possible impacts on groundwater of reduced recharge resulting from various water use efficiency measures are dismissed as having unknown significance. These potential impacts are more real than many of the other groundwater impacts identified.

The groundwater impacts identified for water transfer should also apply to water purchase activities of the ecosystem restoration program.

Page 6.2-26. The estimates of water transfer potential in the Phase II report show no significant difference among Alternatives 1, 2, and 3. Therefore, the discussion of potential adverse impacts from Alternative 3 from increased cross-Delta conveyance is completely erroneous. As noted above, the impacts identified for water transfers also need to be discussed for the water purchase portion of the ERP which will have the same effects.

Page 6.2-27, Water Use Efficiency. The reductions in recharge resulting from increased water use efficiency are significant and could interfere with ongoing conjunctive use programs. The statement that stream channel recharge is more important is wrong; by far the major source of recharge in the San Joaquin River Region is deep percolation of irrigation applications. Recharge from streams in the San Joaquin River Region accounts for less than 10 percent of total recharge.

Page 6.2-28. The primary source of recharge in the San Joaquin River Region is over-application of applied irrigation water. For the confined aquifer, reductions in this source in the forebay areas of the Valley's east side resulting from the water use efficiency program would reduce recharge and affect confined water levels. Increased irrigation efficiencies in areas overlying the confined aquifer would also result in decreased recharge as the leakage across aquitards would be decreased.

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Page 6.2-29. Setback levees would generally be located at low points in the Sacramento and San Joaquin River Regions, where groundwater levels area high and generally discharge into streams. Additional seepage at these locations would be unlikely to occur, and if it did, would likely aggravate existing drainage problems.

The mitigation strategies for upper watershed areas address impacts that would not be associated with the CALFED program.

Power Production and Energy
Draft PEIS/EIR Section 8.5,
Page 8.5-2
The identifiers in the table needs to show an increased level of impact. The DWR/SWP impacts identified in the table appear to be minimal but results discussed later in the section are showing +18%, +6% and +16% impacts to system energy rates which are considerable for Alts 1,2 and 3 respectively.

Page 8.5-9
A system energy rate for the CVP assuming a year 2020 was listed as 21.59 mills/kWh for the No Action Alternative, and on page 8.5-6 the current composite power value is $20.6 /MWh. The document needs to specify a value for the SWP No Action Alternative, since an existing system energy rate is 23.8 mills/kWh is given on page 8.5-6.

Section 8.5.1.2
Page 8.5-2 describes the SWP's net energy requirement before considering off-aqueduct power resources as the appropriate assessment variable to measure. However, the next paragraph lists DWR's existing system energy rate is 23.8 mills per kilowatt hour, which may exclude off-aqueduct resources and sales which may offset each other, however this value appears to include off-aqueduct power charges and should be clarified. DWR's variable net energy rate before considering DWR's off-aqueduct power charges is typically less than half of the 23.8 mills/kwh listed. For example as published by DWR's State Water Project Analysis Office on March 12, 1998, for actual year 1997, DWR's system energy rate was only 9.61 mills per kilowatt-hours, which corresponds to a system energy rate of 23.24 mills per kilowatt-hours including off-aqueduct payments.

Suggested Correction:
If the proper net energy requirement did exclude off-aqueduct resources and costs, which was used in the assessment and the impacts to off-aqueduct charges was simply an add-on, simply clarify the last sentence preceding section 8.5.2 to read as follows: DWR's existing system energy rate including off-aqueduct power charges is 23.8 mills per kilowatt hour.
(Otherwise a reader may interpret the DWR's variable system energy rate for 1987 of 9.61 mills/kwh would increase to 26.69 for the No Action alternative (Table 8.5.2-2) and not include the off-aqueduct charges which would make it even larger.) It is also recommended to clarify, if valid of course, that the effects of off-aqueduct energy and charges were assumed constant for this analysis or that any increase in off-aqueduct energy requirements was assumed to be offset by an equivalent amount of increased off-aqueduct sales if that was the case.

Section 8.5.2.4

The potential for increased costs to the SWP Contractors/DWR water users was not adequately addressed in the power production and energy sections of the Draft PEIS/EIR. Although Section 8.5.2.4 states that "the significance of the potential impact on SWP water charges is addressed in Section 8.6," Section 8.6 does not in fact address the impacts to Southern California DWR water customers. The impacts to DWR water users was really only mentioned, but not quantified, even in the "Draft CALFED Technical Report—Affected Environment - Power Production and Energy, March 1998 (Technical Report). In fact, it appears that many of these costs could be shifted onto DWR water users. Based on the forecasts made in the Technical Report, any additional power purchases or generation required to meet additional pumping requirements would increase the DWR system energy rate, which would directly impact the SWP Contractors/DWR water users. Section 8.5.2.4 of the Revised Draft PEIS/EIR should quantify, to the extent possible, the increased pumping required by the alternatives, the resultant range of power costs (using the rates in Table 2 of the Technical Report), the financial impacts to the DWR water customers, as well as the beneficiaries potentially liable for the increased charges.

Recreational Resources.
Draft PEIS/EIR Page 8.3-1. There is not any information provided on the permanent closure of recreation facilities due to an isolated facility.

Table 8.3-1. The basis for the "Significant and Unavoidable" classification for the Delta Region for "Increase in Population Without an Appropriately-Sized Recreation Base" is not described in the text. Also, it is not listed in the heading Potentially Significant Unavoidable Impacts at the end of the chapter.

Page 8.3-24. Exactly how would the isolated facility impact recreation facilities on the eastern edge of the Delta? What, if any, permanent closures would results? If impacts are temporary, during the construction period, how could they be considered significant?

Environmental Justice
Page 8.10-1. How can the Hispanic composition of the CALFED Project area be 14 percent, if all the Regions in the project area (except for the Sacramento River Region, which is only about five percent of the CALFED Project Area) have an equal, or higher percentage. This number is obviously wrong.

Page 8.10-4. This discussion of Program alternatives looks strictly at the adverse aspects of the storage and conveyance programs. To the extent that the storage and conveyance program provides additional water supplies to the San Joaquin River region or the SWP/CVP service areas, this should provide improved conditions for minority populations in those areas.

The off-stream storage facilities, in general, are located in areas without stream fisheries and would not be expected to cause impacts to fisheries.

Page 8.10-5. If water is transferred from an area of lower minority population to an area of higher minority population, it should have beneficial impacts.
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